

In-Situ / In-Flight Detection of Fluorescent Proteins Using Imaging Spectroscopy Sensors, Phase II

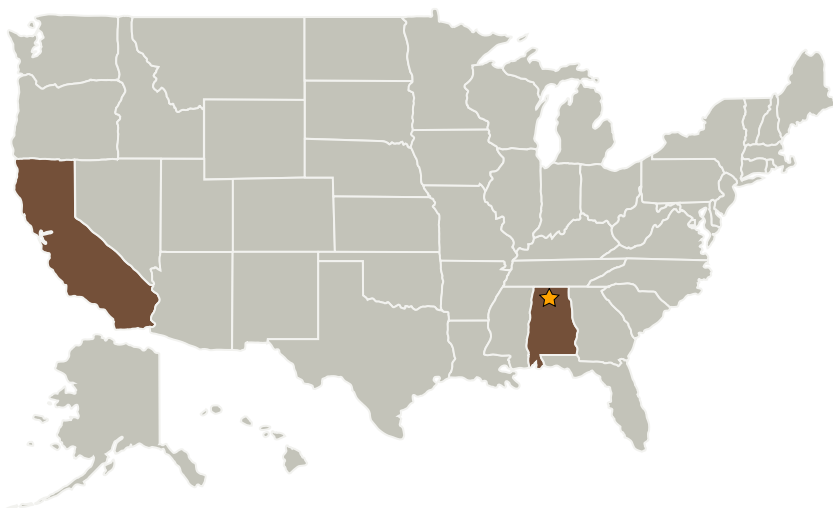
Completed Technology Project (2004 - 2006)



Project Introduction

The proposal addresses technologies relevant to NASA's new Vision for Space Explorations in the areas of robotics, teleoperations, and macro and micro imaging systems, while developing a generic biology research facility. In order to carry out NASA's new vision of exploration and prepare for eventual human presence beyond Low Earth Orbit and on the surface of the Moon, Mars, and beyond, we must collectively understand how life and specific biological systems adapt, respond, and thrive in these unique environments. Planning for extended human presence in the reduced gravity environments of the Moon and Mars will require a solid biological understanding from the sub-cellular to the whole organism level. The proposed facility supports space-based technologies that enable cross-species comparative biological research and will include in-situ autonomous capability to extract genetic, genomic, proteomic, and metabolic information while providing tools to utilize and interpret such data. Of critical importance is the incorporation and utilization of these monitoring and control systems that will successfully accommodate and adapt to the changing needs of biological systems or specimens over long periods of time. The facility will be the first scientific payload equipped with automated in-situ technology that allows detection and analysis of fluorescence, which is crucial to the fundamental understanding of biological properties of cellular, sub-cellular, and whole organisms during exploration of space and planets.

Primary U.S. Work Locations and Key Partners



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Organizational Responsibility

Responsible Mission Directorate:

Space Technology Mission Directorate (STMD)

Lead Center / Facility:

Marshall Space Flight Center (MSFC)

Responsible Program:

Small Business Innovation Research/Small Business Tech Transfer

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Organizations Performing Work	Role	Type	Location
★ Marshall Space Flight Center (MSFC)	Lead Organization	NASA Center	Huntsville, Alabama
Opto-Knowledge Systems, Inc. (OKSI)	Supporting Organization	Industry	Torrance, California

Primary U.S. Work Locations

Alabama	California
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Project Management

Program Director:

Jason L Kessler

Program Manager:

Carlos Torrez

Technology Areas

Primary:

- TX07 Exploration Destination Systems
 - └ TX07.2 Mission Infrastructure, Sustainability, and Supportability
 - └ TX07.2.3 Surface Construction and Assembly